DOCUMENT RESUME

ED 286 482 IR 012 815

AUTHOR Anderson, Paul S.
TITLE Distance Education for Teaching Map Use Skills: An Introduction.
PUB DATE Nov 85
NOTE 6p.; Paper presented at the Annual Meeting of the North American Cartographic Information Society (Chicago, IL, November 10-13, 1985).
PUB TYPE Reports - Descriptive (141) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Course Content; *Distance Education; Inservice Teacher Education; *Instructional Design; *Map Skills; Postsecondary Education

ABSTRACT

A proposed distance education course on map use which is designed primarily for American inservice social studies teachers is described in this paper, which begins with a brief overview of the use of distance education for teaching map use skills. A low-budget distance education course that has been taught in Brazil--i.e., Fundamentals for Photointerpretation--is then described, and the objectives of the proposed course are reviewed. Various kinds of course materials that could be used are listed, and a typical exercise sequence is suggested. Geographic scope and operational issues are discussed, and a tentative arrangement for presenting this course in Illinois that was under consideration when this paper was presented is briefly described. Seven references are provided. (MES)

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Distance Education for Teaching Map Use Skills: An Introduction

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Paul S. Anderson
Department of Geography-Geology
Illinois State University
Normal, IL 61761
(309) 452-7072

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ABSTRACT

Distance education refers to learning situations in which the teacher and student(s) do not have regular face-to-face meetings. Academically rigorous distance education for map use and related studies have been conducted at most grade levels. Examples from Australian grade schools, British high schools and diverse universities are given. Specifically described is the author's "Fundamentals for Photointerpretation" course taught in Brazil on an extremely low budget. Also discussed is a proposed in-service teacher up-dating course on map use for American schools. It is directed mainly toward social science teachers who could better use maps in their existing courses. Distance education is the single most powerful, cost effective method to reach large numbers of learners with high quality instruction in a minimum of time. An energetic, coordinated program of distance education for map use can have far-reaching impact to improve the teaching and usage of geographic and cartographic information.

(A paper delivered to the annual meeting of the North American Cartographic Information Society (NACIS), held in Chicago-Skokie, Illinois, on November 10-13, 1985.)

INTRODUCTION

The need for teaching map use skills is widely accepted. Basic geographic and cartographic education in American high schools and universities has been neglected and has led to a general deficiency in students and the public in the use of maps. This paper is a discussion of how distance education can be utilized to help overcome that deficiency. Distance education refers to learning situations in which the teacher and student(s) do not have regular face-to-face meetings. Education at a distance includes instruction by correspondence courses, public television classes, the Open University in the United Kingdom and a wide range of multi-media educational programs. There are numerous international, national and local professional organizations and academic institutions actively involved in the research and application of distance education to the entire spectrum of academic disciplines, grade levels and socio-economic circumstances.

The ability of distance education to provide quality instruction for large numbers of students at economical prices is well established around the world (see Holmberg, 1977, and the publications of the International Council for Distance Education (ICDE)). But it is frequently unknown or underestimated in places where it could have great impact. A wide variety of methods can be used in distance education, including very sophisticated and attention getting radio and television broadcasts. However, the original methods of distance education, plus many excellent contemporary courses, utilize written materials which are distributed by mail. It can be similar to correspondence courses, although the quality of distance education programs should not be associated with the general image of correspondence classes. One major difference is that distance education typically has fixed time periods and specified dates for examinations and course completion, as opposed to rather open-ended courses which could run for many months or even years in the typical correspondence mode. Furthermore, distance education can include face-to-face contact

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between the students and instructors. These contacts are generally infrequent, often voluntary and can be designed to meet specific needs. Some of these methods are illustrated in the existing use of distance education for teaching map use and related subjects.

PRE-1986 EXAMPLES

Academically rigorous distance education for map use and related subjects has been conducted at most grade levels. In Australia, where the entire grade school curriculum can be taught to children in the "outback", map use and geography are included. As the students proceed to higher grade levels, the course materials become more structured. For the British secondary school examinations at the "O" and "A" levels, a series of preparatory modules of studies are published and available (ICS, 1977). For those courses, the students do not have final examinations or cumulative grading. Rather, the studies are preparatory for the battery of examinations in the British secondary school system. These materials are used not only in the United Kingdom, but also by students in the British system overseas.

Map use is one of the elements included in the large enrollment course of Geography I at the University of New England (UNE) in Armidale, New South Wales, Australia, where the author worked for several years. The student enrollment includes approximately 200 internal (traditional) students plus 300 external (distance education) students who are over the age of 21. Many of those external students have been in-service grade school and secondary school teachers. At UNE, a packet of exercises is mailed to the individual students who work independently in their homes. Some of the exercises have answers provided with them; others are to be returned by mail to the university for grading. The supervised final examinations taken at widely dispersed testing centers can include some questions dealing with map use skills. The statistics reveal that the external students learn an equivalent amount to that of internal students in the same course. Distance education does not lower educational quality.

The author has also developed distance education materials for teaching map use in Portuguese in Brazil. Those materials have not been used for distance education, but a similarly structured course on "Fundamentals for Photointerpretation" was taught with distance techniques three times on an extremely low budget (Anderson, 1983). Each student received a set of reading materials, maps and/or aerial photographs, and additional supplies to permit them to answer a battery of questions printed in a student study guide. As such, it was an extremely appropriate method for providing quality education to students in developing countries (Anderson, 1985).

MAP USE MATERIALS FOR AMERICA

A great variety of map use study materials is available in the English language. The selection of the appropriate materials for any given course is an individualized effort by each teacher. Many instructors have been developing their own materials, often with appropriate local or regional emphasis. The availability of that material for use by others would be an extremely useful tool to accompany the existing textbooks and published map materials. To gather those materials for easier dissemination, the Cartography Specialty Group (CSG) of the Association of American Geographers (AAG) has conducted since 1984 a project to identify and disseminate those materials (Anderson, 1985). Those materials will be especially valuable in the distance teaching of map use skills.

A COURSE FOR AMERICA

The offering of map use courses by a distance education method must take into

account the academic realities within the United States. Each state of the union specifies its own course emphases and tends to have course content directed toward topics of relevance to that particular state. It is logical, therefore, to address the teaching of map use skills to the specific state in which the students reside. Other important factors are the educational level of the students, their distribution within the state, their objectives in taking the course, and the course credits and financial considerations of offering such a course. Each target population and situation could require a slightly modified course structure. Rather than try to discuss all of them, this paper focuses on a proposed in-service teacher up-dating course on map use. Any particular references refer to the State of Illinois, but the course structure has nationwide applications.

The target population is school teachers in secondary and elementary education, most specifically the social science, environmental studies, and history teachers who could better use and integrate maps in their existing courses. A specific objective for this distance education course is to stimulate and facilitate map use skills in the classrooms of those teachers. The ultimate intended result is to have a great many more American school children develop better proficiencies with map use. The distance education course would probably be at an upper division or graduate level of course credit, and the enrollees would be required to focus on the understanding and application of the techniques, rather than on specific skills that are typically required in university geography courses in map reading. The in-service teachers need to be knowledgeable of the basic characteristics and sources for the various maps that they could use in their individual classrooms with a variety of social studies, history and earth science topics. The ultimate objective is to have a dramatic improvement in the school children's familiarity and usage of maps. As the children are exposed to cartographic products, they will develop their map use skills to solve their inquiries that are so well raised by the graphic communication of maps.

COURSE MATERIALS

To accomplish both the distance education course objective and the school classroom application objective, each enrollee (in-service teacher) needs to have a variety of materials available for study at home and for use in the schools. The distance education course will provide as part of its cost a standardized set of materials. These materials would likely include:

a) a textbook; such as Map Use by Phillip Muehrcke (1986)
b) a topographic map of one specific and interesting study area within the state at a scale of 1:24,000; perhaps the LaSalle quadrangle because of its geographic diversity.
c) one copy of each of the other topographic maps that include the study area, at scales of 1:62,500; 1:250,000; 1:500,000; 1:1,000,000.
d) aerial photograph(s) of an interesting zone in the study area.
e) a standard school atlas of the world, possibly the Goode's World Atlas (latest edition).
f) a collection of map use exercises, such as the collection being coordinated on behalf of the Cartography Specialty Group of the Association of American Geographers. (This collection will include materials from a variety of contributing authors.)
g) student's Study Guide, specifically designed for each target population.
h) complimentary maps and materials, contributed by major cartographic organizations; for example, the USGS freely distributes several brochures.
i) supplementary books, possibly including Atlas of Cultural Features, Hubbard Press, Chicago, Illinois.
j) topographic and thematic maps of the enrollee's local area, to be selected and

ordered by each in-service teacher as one of the first exercises on coordinate systems, index maps and map libraries. These maps are used in the local area course project of each enrollee.

k) if available, videotaped special presentations could be viewed at home or at local study centers.

The quantity of material has a correspondingly high cost ($60-90) in comparison with the low materials costs to the students in traditional courses where the university provides maps, etc. The cost is fully justified because of the necessity of distance education courses to have sufficient materials in the hands of every student. Those students (the in-service teachers) do not have access to the materials in a traditional university situation nor do they have regular person-to-person contact with their instructor. Published materials are, therefore, much more important in these circumstances. Furthermore, those materials will be used repeatedly in the elementary and secondary school classrooms as the distance education enrollees utilize the material in subsequent semesters. The final costs are, nevertheless, lower because distance education reduces expenses for travel time, room and board and institutional infrastructure.

TYPICAL EXERCISE SEQUENCE

Since the published items must substitute for much of the individualized contact with the instructor, those materials must have both flexibility and sufficient detail to insure that the students are adequately informed about each segment of the course. The starting point and the overall controlling component of the course is the student's study guide. This is a relatively short document that provides the major guidance within the various components of the course. A typical unit includes a session number, its title, and an introductory statement concerning the unit. The specific objectives of the unit are clearly stated, and the student is directed to the appropriate readings and exercises to be completed before starting the next unit.

Being short and distinct for each target population, the study guides can be extremely different. Each study guide would introduce and direct the specific group of students through the various materials available in a different order and/or with a different emphasis. For example, there might be a study guide for adults who are specifically interested in maps for travel or outdoor recreation. The emphasis would be upon highway maps to reach specific destinations and large scale topographic maps for campsite selection and outdoor activities. In contrast, a study guide for high school teachers of social studies and history might use the atlas maps for a broad overview and the medium and small scale topographic maps to show interrelationships between specific areas. In all of these cases, the map skills are very similar, but the maps on which the exercises are done are quite distinct. Exercises must be available for all of these various objectives, even though only a selection of them are used with any target group in any specific course.

GEOGRAPHIC SCOPE AND OPERATIONAL ISSUES

Theoretically, there is no limit to the geographic scope of distance education provided that delivery systems such as the mail service regularly reach the enrollees. The courses, therefore, could be national in scope, except that there are a few practical limitations. First, political boundaries result in different educational programs and objectives from one state to another. A single standardized course for many states would probably not be acceptable. Second, the examples used in the course should have some relevance to the local setting of the students. Examples and the maps distributed to each student should, therefore, be different for various sections of the country. Third, relatively easy access by enrollees to the instructor and/or an assigned local area tutor is an important factor for

resolving the individual problems confronted by a unique and diverse student body. The net result is a suggestion that a distance course be organized within a specific political unit and geographical region, with a network of regional coordinators, assistant instructors, tutors and study centers established in appropriate locations. As an example, within the State of Illinois one tentative arrangement being considered is to have the materials and course content coordinated in a one location, in this case, by the author at Illinois State University in Normal, Illinois. Other study centers would be located in the Chicago area, northwestern Illinois, the east St. Louis region, or as needed by enrollments. To justify the preparatory expenses, a sufficient number of enrollees is necessary. If too localized, the return on the investment will be insufficient to sustain a long-term effort. By coordination statewide, sufficient numbers are generated and well-paid employment is available for the regional coordinators, tutors, etc.

CONCLUSION

Distance education is the single most powerful, cost-efficient method available to reach large numbers of learners with high quality instruction in a minimum of time. An energetic, coordinated program of distance education for map use can have far reaching impact to improve the teaching and usage of geographic and cartographic information.

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